

Figure 1

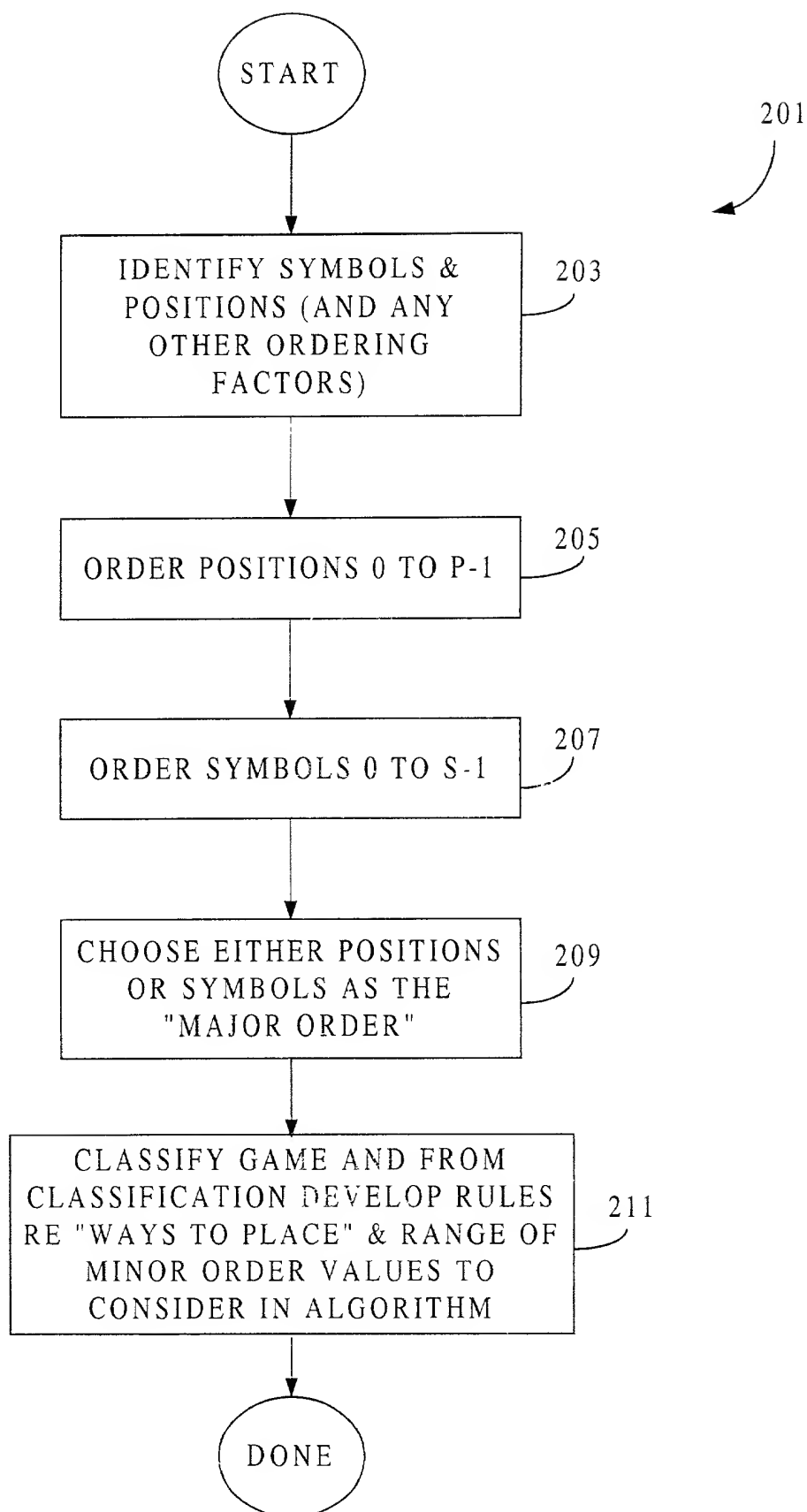


Figure 2

| | | | | |
|-----|-----|----|----|----|
| 2h | 3h | 4h | 5h | 6h |
| 2h | 3h | 4h | 5h | 7h |
| 2h | 3h | 4h | 5h | 8h |
| | | ⋮ | | |
| 2h | 3h | 4h | 5h | Ah |
| 2h | 3h | 4h | 6h | 7h |
| 2h | 3h | 4h | 6h | 8h |
| | | ⋮ | | |
| 3h | 4h | 5h | 6h | 7h |
| 3h | 4h | 5h | 6h | 8h |
| | | ⋮ | | |
| 9s | 10s | Js | Qs | Ks |
| 9s | 10s | Js | Qs | As |
| | | ⋮ | | |
| 10s | Js | Qs | Ks | As |

Figure 3

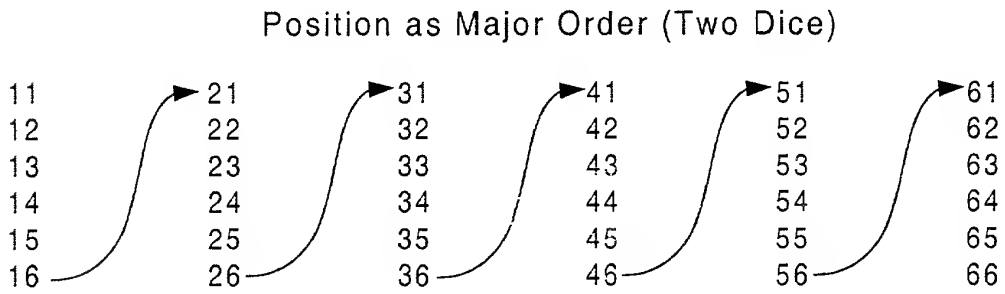


Figure 4

Poker Hand
Under
Consideration

3H KH 2D 7C 4S

| | | | | | | | |
|--|-----|-----|----|----|----|-------------------------------|--|
| number skipped over at position P=0 | 2H | 3H | 4H | 5H | 6H | Ways to place 3H 4H, | |
| | 2H | 3H | 4H | 5H | 7H | | |
| | 2H | 10S | JS | QS | KS | | |
| | | | | | | | |
| | 2H | JS | QS | KS | AS | | |
| | 3H | 4H | 5H | 6H | 7H | | |
| | 3H | 4H | 5H | 6H | 8H | | |
| | 3H | 4H | JS | QS | KS | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3H | 4H | QS | KS | AS | | | |
| 3H | 5H | 6H | 7H | 8H | | | |
| 3H | 5H | 6H | 7H | 9H | | | |
| number skipped over at position P=1 | 3H | QH | JS | QS | KS | | |
| | 3H | QH | QS | KS | AS | | |
| | 3H | KH | AH | 2D | 3D | | |
| | 3H | KH | AH | 2D | 4D | | |
| | 10S | JS | QS | KS | AS | | |
| | | | | | | | |

Figure 5

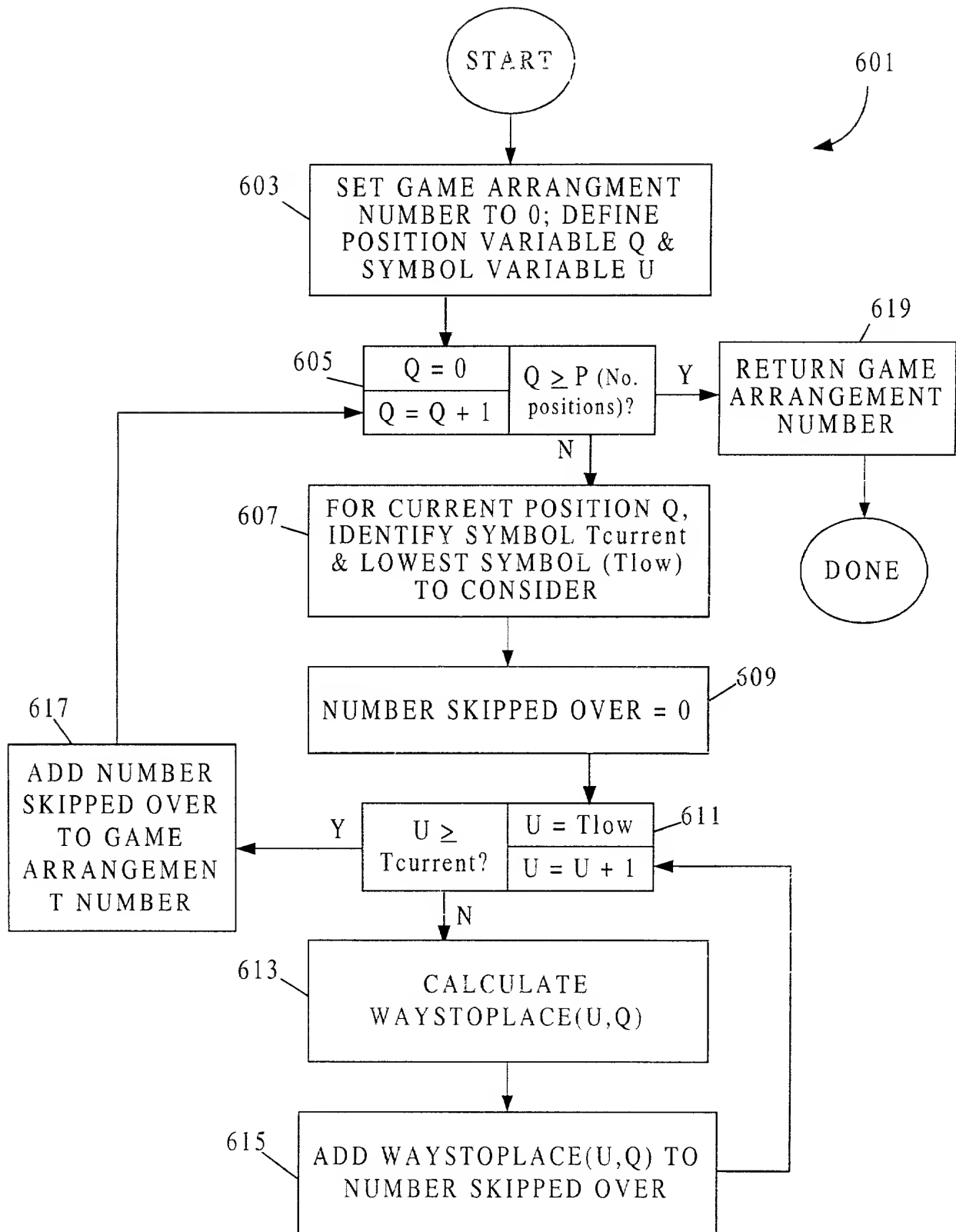


Figure 6

Convert KH, 7C, 4S, 8D, 3H to a number

Order the Cards! → 3H, KH, 8D, 7C, 4S

Start with # = 0

Position Q = 0

Symbol T = 1 (3H) 3H - - -

U = 0 (2H)

Compute # of ways to place 2H - - - - (choose (52-0-1, 5-0-2))
= 249,900

= 0 + 249,900 = 249,900

Position Q = 1, $T_{\text{current}} = \text{KH}$, $T_{\text{Low}} = 4\text{H}$; 3H KH - - -

U = 2 (4H)

Compute # of ways to place 3H 4H - - -
= 18,424

= 249,900 + 18,424 = 268,324

U = 3 (5H)

Compute # of ways to place (3H 5H - - -) = 17,296

= 268,324 + 17,296 = 289,620

U = 4 (6H)

Compute # of ways to place (3H 6H - - -) = 16,215

= # + 16,215 = 301,835

U = 5 (7H)

Compute # of ways to place (3H 7H - - -) = 15,180

= # + 15,180 = 317,015

U = 6 (8H)

Compute # of ways to place (3H 8H - - -) = 14,190

= # + 14,190 = 331,205

U = 7 (9H)

Compute # of ways to place (3H 9H - - -) = 13,244

= # + 13,244 = 344,449

U = 8 (10H)

Compute # of ways to place (3H 10H - - -) = 12,341

= # + 12,341 = 356,796

Figure 7A

U = 9 (JH)

Compute # of ways to place (3H JH - - -) = 11,480

= # + 11,480 = 368,270

U = 10 (QH)

Compute # of ways to place (3H QH - - -) = 10,660

= # + 10,660 = 378,930

U = 11 (KH) This our symbol T. Stop and go to the next position.

Position Q = 2, Symbol T = 19 (8D)

by placing this card
#s skipped over by (3H - - - -)

= ways to place (2H - - - -)

by placing this card
skipped over by (3H KH - - -)

= ways to place (3H 4H - - -)

+ ways to place (3H 5H - - -)

+ ways to place (3H 6H - - -)

+ ways to place (3H 7H - - -)

+ ways to place (3H 8H - - -)

+ ways to place (3H 9H - - -)

+ ways to place (3H 10H - - -)

+ ways to place (3H QH - - -)

skipped over by (3H KH 8D - -)

= ways to place (3H KH 8D - -)

+ ways to place (3H KH AH - -)

+ ways to place (3H KH 2D - -)

+ ways to place (3H KH 3D - -)

+ ways to place (3H KH 4D - -)

Figure 7B

| | Position Dependent | Position Independent |
|---------------------|---|--|
| With Replacement | $\exp(x, y)$ $0 \leq U \leq T_{\text{curr}}$ $T_{\text{low}} = 0$ | $C(x, y)$ $T_{\text{prev}} \leq U \leq T_{\text{curr}}$ $T_{\text{low}} = T_{\text{prev}}$ |
| Without Replacement | $P(x, y)$ $0 \leq U \leq T_{\text{curr}}$ (excluding previously used values) $T_{\text{low}} = 0$ | $C(x, y)$ $T_{\text{prev}} < U < T_{\text{curr}}$ $T_{\text{low}} = T_{\text{prev}} + 1$ |

Figure 8

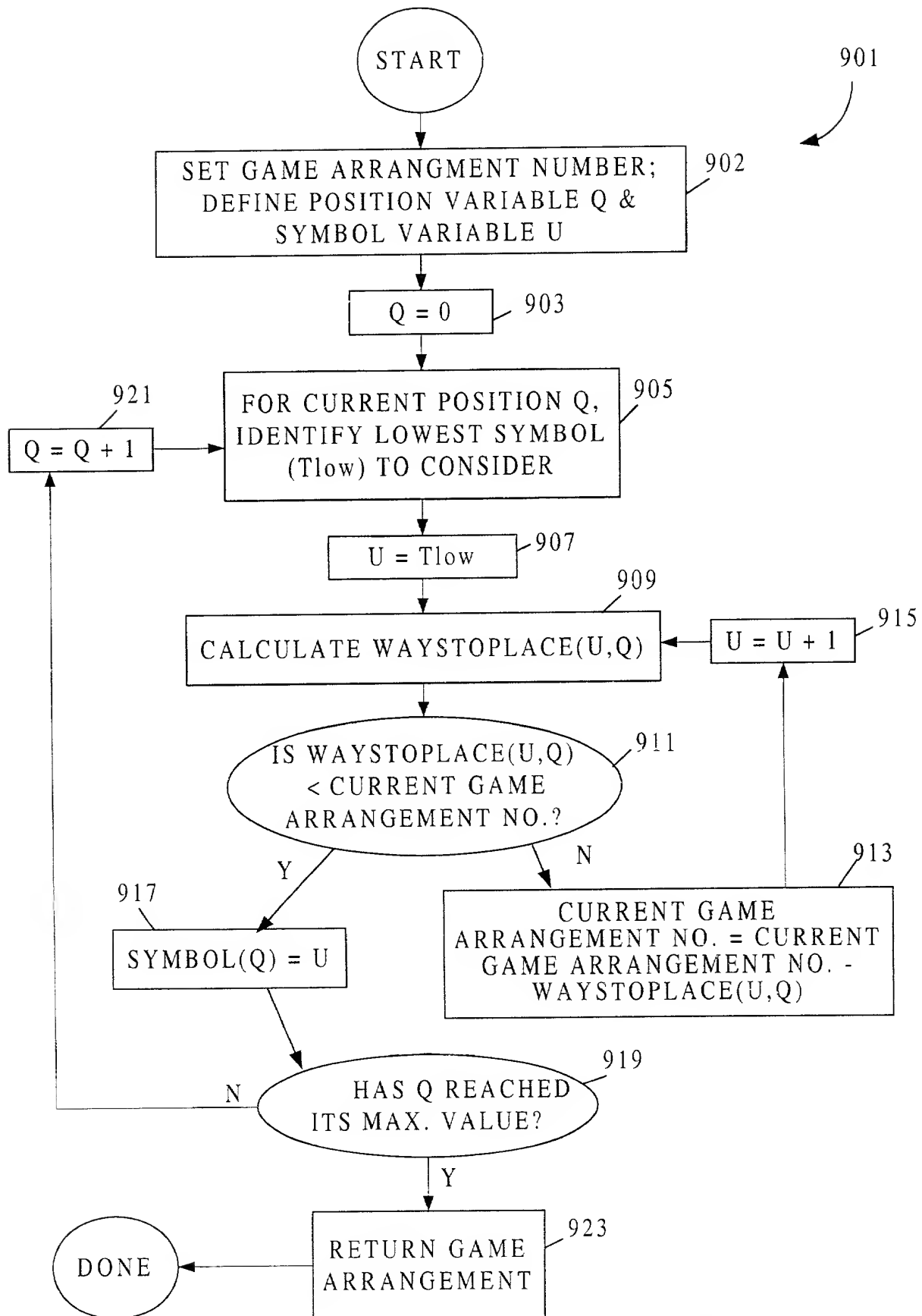


Figure 9

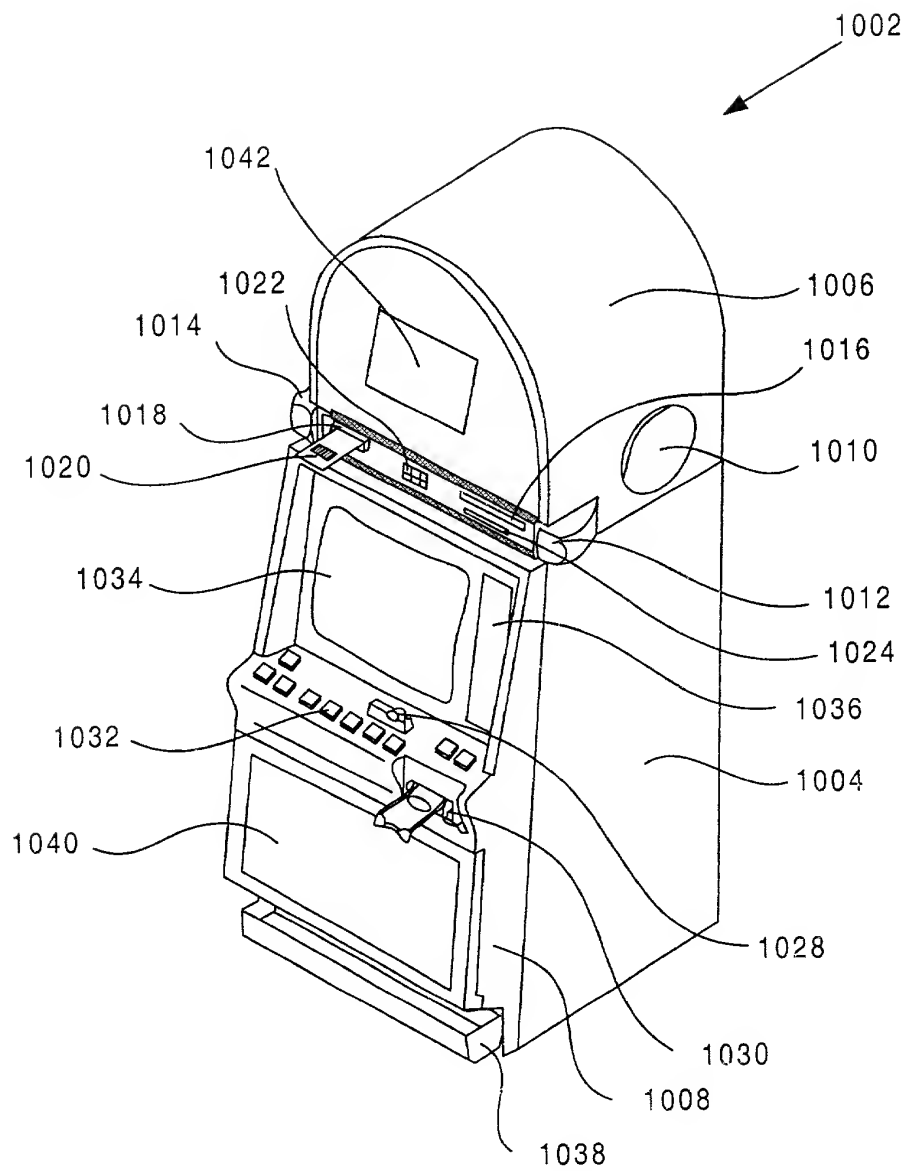


Figure 10

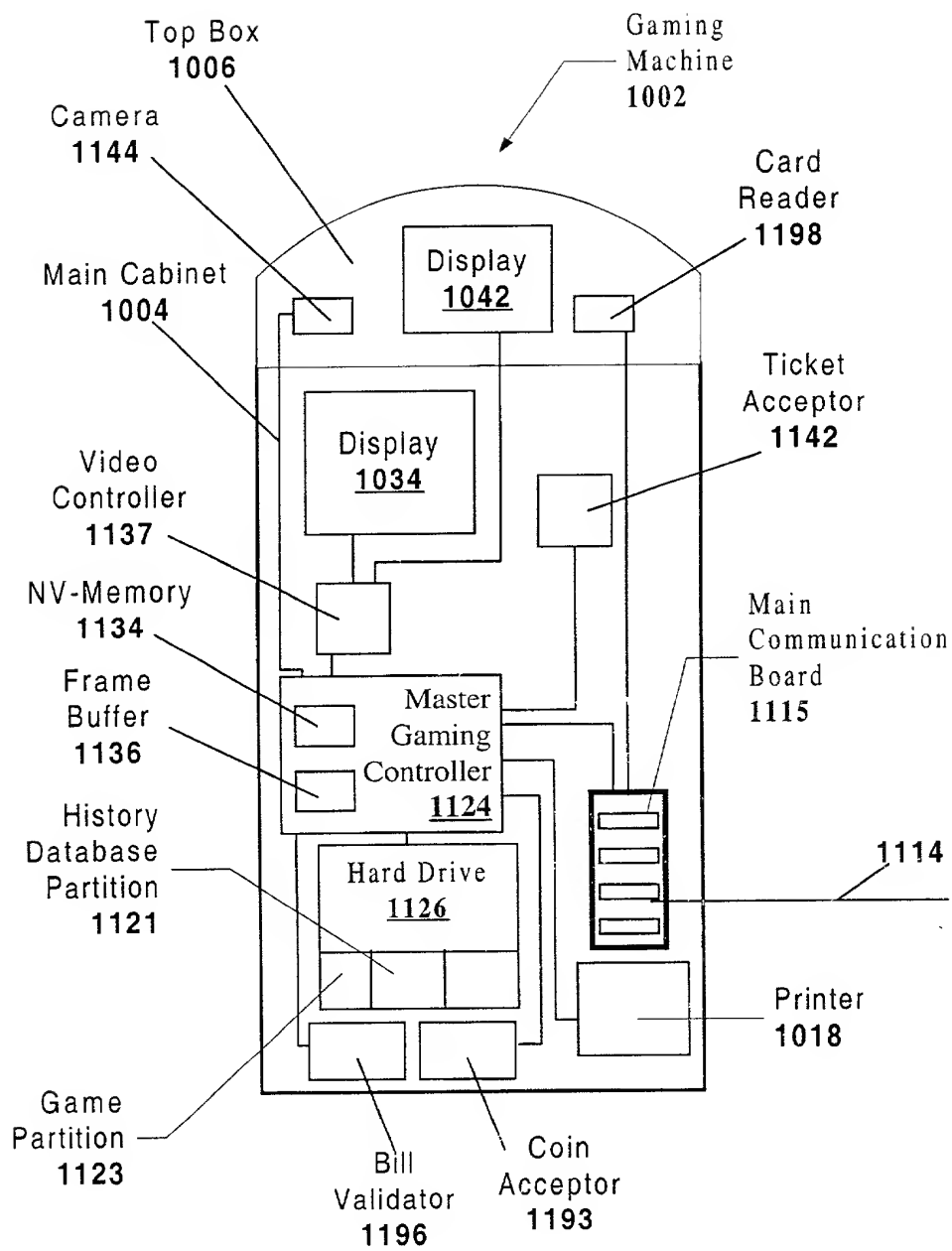


Figure 11